REMARKS

Claims 1-20 are pending. Claims 1 and 11-13 have been amended. Claims 2-4 and 6 are original. Claims 5, 7-10, and 14 have been previously presented. Claims 15-20 are new.

The foregoing amendments do not involve new matter. Support for amended independent claims 1 and 11-13 can be found in Applicants' specification, for example, in Figs. 1 and 2. Support for new claims 15-20 can be found in Applicants' specification, for example, in Figs. 1 and 2; and in page 12, lines 5-24.

1. Summary Of The Present Invention As Illustrated By Below Embodiments

According to one embodiment of the present invention, "the photoconductor surface has a chemically functional layer applied to it and this chemically functional layer may provide the surface for chemical functionalisation of the substrate, such that deposition and/or covalent chemistry can be undertaken on its surface. Depending on the nature of the photoconductor the chemically functional layer may range in thickness from mono-molecular to fractions of a millimetre." Specification at page 7, lines 1-6.

"The chemically functional layer may be adapted to prevent access or reaction between the liquids or reagents in the emulsion and other liquids used in the process and components of the dielectric or photoconductive layer. Alternatively or in addition the chemically functional layer may be a reactive material which allows a chemical reaction with another compound at its surface to form a derivatised or functionalised surface for subsequent

reaction such as with linker molecules. Alternatively the chemically functional layer may be intrinsically reactive and provide a binder function." Specification at page 7, lines 8-15.

"Formation of the chemically functional layer may be achieved using several processes, including immersion of the substrate in reactive chemicals, "painting", dip-coating, spin-coating, vacuum deposition and vapour phase deposition, wherein the chemically functional layer becomes attached by covalent bonding or by other attractive forces after solvent evaporation or curing of resins by, heating, irradiation e.g., with UV light, by treatment with peroxides or catalysts or by free radical mechanisms. Such layers may be formed either in air or under an inert atmosphere such as nitrogen." Specification at page 7, line 27 to page 8, line 4.

The chemically functional layers may be a mono-molecular film. The chemically functional layers may be continuously disposed on the dielectric layer or on the photoconductive layer. The chemically functional layers may be disposed on substantially the entire dielectric or photoconductive layer. Specification at page 12, lines 5-24; Figs. 1 and 2.

It was shown that substrate surfaces could be coated with a chemically functional layer and that the presence of the chemically functional layer (with additional groups bonding thereto) does not prevent the substrate from accepting a charge pattern, or affect volume resistivity of the continuous phase of an emulsion to be disposed to the substrate. Specification at page 12, line 26 to page 13, line 4; page 14, lines 5-9.

In one example, the photoconductor used is a cadmium sulphide photoconductor. The surface of the cadmium sulphide was first silanised with mercaptopropyl trimethoxysilane, then with glycidoxypropyl trimethoxysilane, and ring-opened with 0.5 M HCl to form a chemically functional layer. The

chemically functional layer can subsequently form the substrate for additional chemistries carried out on the surface of the photoconductor. For example, oligodeoxynucleotides are coupled chemically onto the photoconductor surface via the chemically functional layer. Specification at page 12, lines 23-24; page 14, line 22 to page 15, line 5.

"The applicant has surprisingly found that by the use of electrically charged emulsions which include the chemical de-protecting agent in the discontinuous phase and which are selectively deposited on predefined areas of a planar or other shaped substrate under the influence of an electric field, then more accurate, localised and efficient de-protecting may be possible." Specification at page 3, lines 7-11.

2. Claim Interpretation

Regarding claim interpretation, the Applicant agrees that in its broadest interpretation, a dielectric layer covers a photoconductive layer. The Applicant, however, disagrees with the Examiner's statement that "in the context of this invention, in light of the teachings of the spec and the embodiments in the claims, the terms will be interpreted as *interchangeable* when it comes to a particular teaching in the art regarding certain layers of a substrate" (Office Action, page 14; emphasis added). Again, although in its broadest interpretation, a dielectric layer covers a photoconductive layer, these two terms are not interchangeable.

3. Claim Rejections under 35 U.S.C. § 102(e) and 103(a)

A. Claims 1-5, 7-9, And 11-13

Claims 1-5, 7-9, and 11-13 have been rejected under 35 U.S.C. § 102(e) over McEntee et al. (U.S. Pat. Pub. No. 2004/0050701). The Applicant respectfully traverses this rejection.

McEntee discloses a method and apparatus to guide droplets of materials to a plurality of locations (deposition locations) on an array deposition sites (see paragraphs [0009]-[0014]). The deposition sites are in an array form, isolated and discreet from each other (see Fig. 2; and paragraphs [0046] and [0108]). The deposited materials chemically bond to the array surface at the preferred, isolated deposition sites (see paragraph [0050]).

McEntee further expressly stated the object of the McEntee invention is to reduce placement errors of droplets in printing (see paragraphs [0006-0008]). The technique used in McEntee to achieve such object is to electrostatically guide droplets of deposition materials to the isolated and discreet deposition sites on the array surface (see paragraphs [0009]-[0014]).

The Examiner asserted that the material attached to the substrate in the instant specification is "chemically bonded with the photoconductor surface", referring to paragraph 84, and that the same type of attachment occurs in McEntee (Office Action, page 15). The instant specification in paragraph 84 discloses a cadmium sulphide photoconductor. The surface of the cadmium sulphide was first silanised with mercaptopropyl trimethoxysilane, then with glycidoxypropyl trimethoxysilane, and ring-opened with 0.5M HCl to form a chemically functional layer. The chemically functional layer can subsequently form the substrate for additional chemistries carried out on the surface of the photoconductor. For example, oligodeoxynucleotides are coupled chemically onto the photoconductor

surface *via the chemically functional layer*. Specification at page 12, lines 23-24; page 14, line 22 to page 15, line 5.

In sharp contrast, as discussed in the prior response, McEntee does not teach any separate chemically functional layer disposed on the dielectric/photoconductive layer that provides a protective layer for the dielectric/photoconductive layer and a chemically reactive surface for compounds to be deposited to the substrate. Rather, the materials to be deposited to the substrate bond to isolated deposition sites directly by electrostatical charges.

The Examiner also asserted that the deposited molecules meet the limitation of a chemically functional layer. As discussed above, the deposition sites of McEntee are in an array form, isolated and discreet from each other; and the deposited materials chemically bond to this array of isolated and discreet deposition sites. In contrast, amended independent claims 1 and 11-13 recite a continuous chemically functional layer.

Moreover, as discussed in the prior response, although the substrate 110 in McEntee "may further comprise additional layers (not shown) for chemical, biological, mechanical, structural or other purposes" (paragraph 0052, lines 5-7), there is no teaching in McEntee that these possible additional layers should be on the front surface of the dielectric/photoconductive layer. Further, there is no teaching in McEntee that such additional layer, if any, is continuous. Indeed, it may well be the case that such additional layer, if any, is conformed to the form of the deposition sites; that is, such additional layer, if any, can be in an array form, each part of the additional layer isolated and discreet from each other.

In view of the above, the Applicant respectfully submits that McEntee would not anticipate amended independent claims 1 and 11-13. Accordingly,

the rejection of amended independent claims 1 and 11-13 have been overcome and should be withdrawn.

Moreover, the dependent claims are patentable since they depend from the patentable independent claim 1.

B. Claims 6, 10, And 14

Claims 6 and 10 have been rejected under 35 U.S.C. § 103(a) over McEntee and further in view of Salafsky et al. (U.S. Pat. Pub. No. 2002/0094528). Claim 14 has been rejected under 35 U.S.C. § 103(a) over McEntee and further in view of Stolka et al. (U.S. Pat. No. 4,265,990). The Applicant respectfully traverses this rejection.

Claims 6, 10, and 14 are all dependent on amended independent claim 1. Claim 1 has been shown to be patentable over McEntee. Further, the claimed features of claim 1 are not taught by Salafsky or Stolka. Thus, McEntee and Salafsky, or McEntee and Stolka, even if combined, would not make the invention of claim 1 obvious. Claim 1, and claims 6, 10, and 14 dependent thereon, are thus patentable over McEntee and Salafsky, or McEntee and Stolka.

4. New Claims 15-20

Claims 15-20 are new. Claim 15 recites “the continuous chemically functional layer is disposed on substantially the entire dielectric layer”. Claims 17 and 19 recite “the continuous chemically functional layer is disposed on substantially the entire photoconductive layer”. Claims 16, 18, and 20 recite “the continuous chemically functional layer is a mono-molecular film”.

5. Conclusion

In view of the above, the Applicant respectfully submits that the claims are in condition for allowance. The Examiner is kindly invited to contact the undersigned attorney to expedite allowance.

Respectfully submitted,

Date: September 9, 2010

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